

We Claim:

1. A method for receiving a radio frequency signal of a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the method comprising the steps of:

processing the radio frequency signal in combination with a first analogue demodulating signal to produce a first analogue intermediate signal, and

processing the first analogue intermediate signal in combination with a second analogue demodulating signal to produce a second analogue intermediate signal, wherein the frequency resolution of the first analogue demodulating signal is wider than the channel spacing, and the frequency resolution of the second analogue demodulating signal is finer than the frequency resolution of the first analogue demodulating signal, and the frequencies of the first and second analogue demodulating signals are adjusted in accordance with their respective frequency resolutions in order to tune the receiver to the radio frequency signal.

2. A method as claimed in claim 1, wherein adjustment of the first and second demodulating signals tunes the receiver to the channel frequency of the radio frequency signal.

3. A method as claimed in claim 1, wherein adjustment of the first and second demodulating signals tunes the receiver to a channel frequency in the vicinity of the radio frequency signal in order for a digital tuning process to further tune the receiver to the channel frequency of the radio frequency signal.

4. A method as claimed in claim 1, wherein the first analogue intermediate signal is processed in combination with a further analogue demodulating signal

before being processed in combination with the second analogue demodulating signal.

5. A method as claimed in claim 1, wherein the processing steps comprise mixing one signal in combination with another signal.

6. A method as claimed in claim 1, wherein the modulating or demodulating signals are produced by frequency synthesisers.

7. A method as claimed in claim 1, wherein the first and second modulating or demodulating signals are produced by separate frequency synthesisers.

8. A method as claimed in claim 1, wherein one of the modulating or demodulating signals is produced by a combined output of two frequency synthesisers.

9. A method as claimed in claim 1, wherein the frequency resolution of the second analogue demodulating signal is greater than a channel spacing.

10. A method for transmitting a modulation signal in a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the method comprising the steps of:

processing the modulation signal in combination with a first analogue modulating signal to produce an analogue intermediate signal, and

processing the analogue intermediate signal in combination with a second analogue modulating signal to produce a radio frequency output signal at a channel frequency of the multiple channel radio system, wherein the frequency resolution of the second analogue modulating signal is wider than the channel spacing, and the frequency resolution of the first analogue modulating signal is

finer than the frequency resolution of the second analogue modulating signal, and the frequencies of the first and second analogue modulating signals are adjusted in accordance with their respective frequency resolutions so as to change the channel frequency of the output signal.

11. A method as claimed in claim 10, wherein the radio frequency output signal is processed in combination with a further modulating signal before being transmitted.
12. A method as claimed in claim 10, wherein the processing steps comprise mixing one signal in combination with another signal.
13. A method as claimed in claim 10, wherein the modulating or demodulating signals are produced by frequency synthesisers.
14. A method as claimed in claim 10, wherein the first and second modulating or demodulating signals are produced by separate frequency synthesisers.
15. A method as claimed in claim 10, wherein one of the modulating or demodulating signals is produced by a combined output of two frequency synthesisers.
16. A method as claimed in claim 10, wherein the frequency resolution of the second analogue demodulating signal or the first analogue modulating signal is equal to the channel spacing.
17. A method as claimed in claim 10, wherein the frequency resolution of the second analogue demodulating signal or the first analogue modulating signal is greater than a channel spacing.

18. Radio frequency receiving apparatus for receiving a radio frequency signal of a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the apparatus comprising:

signal generating means for producing a first analogue demodulating signal with a frequency resolution wider than the channel spacing, and a second analogue demodulating signal with a frequency resolution finer than the first analogue demodulating signal,

first processing means for processing the radio frequency signal in combination with the first analogue demodulating signal to produce a first analogue intermediate signal,

second processing means for processing the first analogue intermediate signal in combination with the second analogue demodulating signal to produce a second analogue intermediate signal, and

adjusting means arranged in cooperation with the signal generating means to adjust the frequencies of the first and second demodulating signals in accordance with their respective frequency resolutions in order to tune the receiver to the radio frequency signal.

19. Apparatus as claimed in claim 18, wherein adjustment of the first and second demodulating signals tunes the receiver to the channel frequency of the radio frequency signal.

20. Apparatus as claimed in claim 18, wherein adjustment of the first and second demodulating signals tunes the receiver to a channel frequency in the vicinity of the radio frequency signal, and the apparatus further comprises digital tuning means to further tune the receiver to the channel frequency of the radio frequency signal.

21. Apparatus for transmitting a modulation signal in a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the apparatus comprising:

signal generating means for producing a second analogue modulating signal with a frequency resolution wider than the channel spacing, and a first analogue modulating signal with a frequency resolution finer than the second analogue modulating signal,

first processing means for processing the modulation signal in combination with the first analogue modulating signal to produce an analogue intermediate frequency signal,

second processing means for processing the analogue intermediate signal in combination with the second analogue modulating signal to produce a radio frequency output signal, and

adjusting means arranged in cooperation with the signal generating means to adjust the frequencies of the first and second modulating signals within their respective frequency resolutions so as to change the channel frequency of the output signal.

22. Apparatus as claimed in claim 18, wherein the signal generating means comprises a first synthesiser for producing the first analogue modulating or demodulating signal, and a second synthesiser for producing the second analogue modulating or demodulating signal.

23. Apparatus as claimed in claim 18, wherein the first and/or second processing means comprises a mixing unit.

24. A method for receiving a radio frequency signal of a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the method comprising the steps of:

processing the radio frequency signal in combination with a first analogue demodulating signal to produce a first analogue intermediate signal, and

processing the first analogue intermediate signal in combination with a second analogue demodulating signal to produce a second analogue intermediate signal, wherein the frequency resolution of the second analogue demodulating signal is wider than the channel spacing, and the frequency resolution of the first analogue demodulating signal is finer than the frequency resolution of the second analogue demodulating signal, and the frequencies of the first and second analogue demodulating signals are adjusted in accordance with their respective frequency resolutions in order to tune the receiver to the radio frequency signal.

25. A method for transmitting a modulation signal in a multiple channel radio system, in which each channel has an associated channel frequency and the channel frequencies of adjacent channels are separated by a channel spacing, the method comprising the steps of:

processing the modulation signal in combination with a first analogue modulating signal to produce an analogue intermediate signal, and

processing the analogue intermediate signal in combination with a second analogue modulating signal to produce a analogue radio frequency output signal, wherein the frequency resolution of the first analogue modulating signal is wider than the channel spacing, and the frequency resolution of the second analogue modulating signal is finer than the frequency resolution of the first analogue modulating signal, and the frequencies of the first and second

analogue modulating signals are adjusted in accordance with their respective frequency resolutions so as to change the channel frequency of the output signal.